

REMARKS

Applicants respectfully request reconsideration of the present application in view of the foregoing amendments and in view of the reasons that follow.

Claims 1, 17, 18 and 28 are currently being amended.

This amendment changes claims in this application. A detailed listing of all claims that are, or were, in the application, irrespective of whether the claim(s) remain under examination in the application, is presented, with an appropriate defined status identifier.

After amending the claims as set forth above, claims 1-28 are now pending in this application.

Rejections under 35 U. S. C. §102 (b)

Claims 1-28 stand rejected under 35 U. S. C. §102 (b) as being anticipated by U.S. Patent No. 6,454,675 to Asayama et al. ("Asayama"). Applicants respectfully traverse this rejection for at least the following reasons.

Independent claim 1, as amended, recites:

1. A slippage prevention apparatus of a belt-drive continuously variable transmission for an automotive vehicle, which employs a primary variable-width pulley of an input side, a secondary variable-width pulley of an output side, and a drive belt running in the primary and secondary pulleys, and whose downshift is made by an increase in a V-groove width of the primary pulley arising from a drop in a primary pulley pressure supplied to the primary pulley and a decrease in the V-groove width of the secondary pulley occurring in synchronism with the drop in the primary pulley pressure, or by a decrease in a V-groove width of the secondary pulley arising from a rise in a secondary pulley pressure supplied to the secondary pulley and an increase in the V-groove width of the primary pulley occurring in synchronism with the rise in the secondary pulley pressure, comprising:

a speed-change control valve being responsive to a relative-position relationship between a position of a movable flange of the primary pulley and a position of a ratio-change control actuator for switching its valve position among a neutral position, a pressure build-up position in which the primary pulley pressure is supplied to a primary pulley actuation chamber of the primary pulley, and a pressure reduction position in which the primary pulley pressure is drained from the primary pulley actuation chamber;

a belt slippage foretelling section that foretells that a slippage between the drive belt and each of the primary and secondary pulleys tends to occur when the primary pulley pressure is dropping during the downshift; and

a primary-pulley-pressure drop inhibition section that inhibits the primary pulley pressure from dropping by switching the speed-change control valve to either one of the neutral position and the pressure build-up position, when the belt slippage foretelling section foretells that the slippage between the drive belt and each of the primary and secondary pulleys tends to occur during the downshift.

Asayama fails to disclose at least the speed-change control valve as recited in the above italicized portion of claim 1, such a valve in combination with a belt slippage foretelling section and primary-pulley-pressure drop inhibition section as in claim 1, or the advantages of such a combination.

Asayama discloses a so-called direct-acting continuously variable transmission (CVT) in which a primary pulley pressure is directly controlled by regulating a line pressure. Asayama does not suggest a speed-change control valve as specifically recited in claim 1, which controls a primary pulley pressure P_{pri} by being responsive to a ratio-change control actuator. There is no such speed-change control valve as recited in claim 1 in the direct-acting CVT of Asayama.

Moreover, Asayama does not suggest a speed-change control valve as specifically recited in claim 1 in combination with a belt slippage foretelling section and primary-pulley-pressure drop inhibition section as in claim 1. In a CVT having a speed-change control valve as in claim 1, when the CVT is in a transient ratio-changing state, there is a possibility that the primary pulley pressure P_{pri} applied to the primary pulley is not always held at a pressure value required for torque transmission. In this case, there is a possibility of an undesirable undershoot of the primary pulley pressure P_{pri} due to working fluid being drained from the primary pulley at the maximum flow rate (where the opening area of the drain port is maximum). To avoid this problem, when the primary pulley pressure P_{pri} reduces to below a predetermined threshold value set to a pressure value just before a belt-slip limit, the primary-pulley-pressure drop inhibition section inhibits the primary pulley pressure P_{pri} from being released by switching the speed-change control valve to either one of the neutral position and the pressure build-up position. Asayama, failing to suggest a speed control valve with three positions as recited in claim 1, clearly fails to suggest the interaction where when the primary

pulley pressure P_{pri} reduces to below a predetermined threshold value set to a pressure value just before a belt-slip limit, the primary-pulley-pressure drop inhibition section inhibits the primary pulley pressure P_{pri} from being released by switching the speed-change control valve to either one of the neutral position and the pressure build-up position.

Independent claim 18 recites: “providing a speed-change control valve being responsive to a relative-position relationship between a position of a movable flange of the primary pulley and a position of a ratio-change control actuator for switching its valve position among a neutral position, a pressure build-up position in which the primary pulley pressure is supplied to a primary pulley actuation chamber of the primary pulley, and a pressure reduction position in which the primary pulley pressure is drained from the primary pulley actuation chamber; foretelling that the slippage between the drive belt and each of the primary and secondary pulleys tends to occur when the primary pulley pressure is dropping during the downshift; and inhibiting the primary pulley pressure from dropping by switching the speed-change control valve to either one of the neutral position and the pressure build-up position, when the slippage between the drive belt and each of the primary and secondary pulleys has been foretold during the downshift”, and thus is patentable for reasons analogous to claim 1.

The dependent claims are patentable for reasons analogous to their respective independent claims as well as for further patentable features recited therein.

Applicants believe that the present application is now in condition for allowance. Favorable reconsideration of the application as amended is respectfully requested.

The Examiner is invited to contact the undersigned by telephone if it is felt that a telephone interview would advance the prosecution of the present application.

The Commissioner is hereby authorized to charge any additional fees which may be required regarding this application under 37 C.F.R. §§ 1.16-1.17, or credit any overpayment, to Deposit Account No. 19-0741. Should no proper payment be enclosed herewith, as by a check or credit card payment form being in the wrong amount, unsigned, post-dated, otherwise improper or informal or even entirely missing, the Commissioner is authorized to

charge the unpaid amount to Deposit Account No. 19-0741. If any extensions of time are needed for timely acceptance of papers submitted herewith, Applicant hereby petitions for such extension under 37 C.F.R. §1.136 and authorizes payment of any such extensions fees to Deposit Account No. 19-0741.

Respectfully submitted,

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